

NCCS System Environment

COMPUTE

"Discover" Cluster

320.28 TF peak, 29,368 cores, 64.4 TB main memory, InfiniBand interconnect

Base Unit:

- 128 nodes 3.2 GHz Xeon Dempsey (Dual Core)

SCU1 and SCU2:

- 512 nodes 2.6 GHz Xeon Woodcrest (Dual Core)

SCU3 and SCU4:

- 512 nodes 2.5 GHz Xeon Harpertown (Quad Core)

SCU5 and SCU6:

- 512 nodes 2.8 GHz Xeon Nehalem (Quad Core)

SCU7:

- 1,200 nodes, 2.8 GHz Xeon Westmere (Hex Core)

STORAGE

Mass Storage Archive

SGL Front-End

- DMF managed
- SGL Xeon Cluster
- 80 cores
- 468 GB main memory

StorageTek

- 17.5 PB capacity
- T10K, 9940 tape drives
- 9310, SL8500 tape libraries

Shared Storage

- 3.1 PB
- GPFS managed
- nobackup/scratch filesystems

USER INTERFACE

Analysis & Visualization

Dali: 128 cores, 2 TB RAM
Visor: 16 nodes, NVIDIA GPUs

Software Tools

- ESG/CDAT, IDL, ParaView
- Matlab, GrADS, ferret

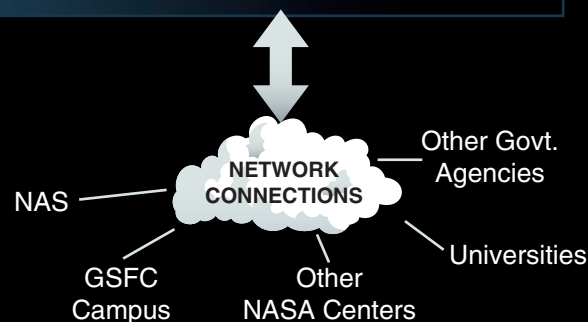
Data Portal

HP Blade Server

- 128 CPUs
- 128 GB main memory
- 200 TB network storage (GPFS)
- NFS served to compute hosts

Software Tools

- IDL, Matlab, GrADS
- ESG Data Node
- Web services
- scp, ftp, bbftp



For More Information:

Dr. W. Phillip Webster

NCCS Project
Computational and Information Sciences
and Technology Office
Code 606

NASA Goddard Space Flight Center
Greenbelt, MD 20771

<http://www.nccs.nasa.gov>

National Aeronautics and
Space Administration



High-Performance Computing at Goddard Space Flight Center



www.nasa.gov

NCCS

Who We Are

The NASA Center for Climate Simulation (NCCS), located at NASA Goddard Space Flight Center, is a High-End Computing (HEC) facility that provides a range of supercomputing and data services to scientists throughout NASA's Science Mission Directorate (SMD). NCCS is part of the NASA HEC Program, together with its sister facility, the NASA Advanced Supercomputing (NAS) facility located at NASA Ames Research Center (ARC).

NCCS is funded by SMD. Scientists request supercomputing resources from NASA Headquarters as part of the scientific proposal process via programs such as ROSES, MAP, NEWS, AURA, etc. Based on the specific needs of each science project, SMD allocates NCCS and/or NAS hours depending on the types of computing services required.

Our User Community

NCCS supports modeling and analysis activities for SMD users in Earth, space, and solar research including:

- **Atmospheric modeling** for climate and weather research
- **Ocean modeling** for climate, chemistry, and biology
- **Land surface modeling** for agriculture, land use, and water resource management
- **Space and solar modeling** for fundamental physics and astronomy, space weather, and gravitational wave studies
- **Coupled models and systems of models** in support of collaborative science efforts
- **Observing system studies** to enhance the use and design of space instruments

NCCS Support Services

Computing

- Multiple large-scale high-performance clusters
- Tools for job scheduling & monitoring
- Portal to National Leadership Class System at NASA/ARC

Data Archival & Stewardship

- Large-capacity storage
- Tools to manage and protect data
- Data migration support

Code Development

- Environment for code development & test
- Code repository for collaboration
- Code porting & optimization support
- Earth System Modeling Framework (ESMF) assistance

Networks

- Internal NCCS high-speed interconnects for HEC components
- Center high-bandwidth access to NCCS for GSFC-based users
- Multi-gigabit network supports on-demand data transfers between NCCS and NAS

Analysis & Visualization

- Interactive analysis environment
- Software tools for image display
- Easy access to data archive
- Specialized data visualization support
- Data visualization wall

Data Sharing

- Capability to share data & results
- Supports community based development
- Facilitates data distribution and publishing

User Services

- Help Desk
- Account support
- User teleconferences
- Training & tutorials

